

# Machine and Experiments

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RHIC Retreat, Shelter Island  
15 June 2005

# 1. How can more delivered luminosity turned into recorded one?

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- What are the times when the detector is not running but luminosity is delivered?
- What of these times can be reduced or eliminated by an improved machine?
- What are the times when detector operation is deemed too dangerous due to machine conditions (beginning of store, end of store, other)?
- With 5 years of operational experience, can some these times be re-declared as safe? For example, can a detector run safely through a beam dump?

## 2. Dealing with more luminosity and polarization

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- Can the experiment handle the Enhanced Luminosities
  - 2× increase for ions
  - $60 \times 10^{30} \text{cm}^{-2} \text{s}^{-1}$  for polarized protons at 100GeV
- Are new background problems anticipated at the higher luminosities?
- Do we need new shielding, changes in collimation?

### 3. Maintenance, beam experiments and access

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- Can we go from a 2-week to a 3-week maintenance cycle?
- Is it possible to reduce the number of unscheduled accesses?
- Should we accumulate more requests for access before granting them?
- Can we have beam experiments on Tuesday, maintenance on Wednesday? (clusters disturbances, creates possible long running periods) Is that compatible with experiment shift schedule?

## 4. Communication

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- Can we have Phil's Wednesday meeting right after the time meeting (without repeating the presentations)?
- Do we need the scheduling meeting at Monday afternoon? If so, can it be attached to an 8:30am RHIC meeting (say Friday)?
- Do we need to expand or change BERT?
- Any other way we should change communication between experiments and scheduling physicist, RHIC Run Coordinator, and MCR?

## 5. Store length

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- Fixed or variable store length preferred?
- Fixed length with option of extension?

## Ion projections for Run-6

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- E-cloud limit probably below for  $10^{11}$  charges/bunch and 111 bunches
  - Limits from experimental background?
  - Problems after installation of new elements?
- Expect only small improvements for time in store
  - 53% of calendar time in Au-Au, Cu-Cu, p-p
- Expect to reach peak performance 3-4 weeks after declaring physics

## Polarized proton projections for Run-6

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- Performance depends critical on AGS cold snake
- Should aim for
  - 60-65% polarization (average per store)
  - 2-3× increase in luminosity  
( $1.5 \times 10^{11}$  p/bunch, 111 bunches, 2 experiments)
- Increase in time-in-store
- Time to reach peak performance less clear